

I claim:

1. An apparatus for determining a position of an object in a beating heart,
comprising:

5 a sensor adapted to be connected to the object;

an imaging device which acquires images of the beating heart;

an electrocardiograph which produces a real-time electrocardiogram of the beating heart;

and

a control unit which processes the acquired images of the beating heart and produces a
10 moving image of the beating heart and which synchronizes the moving image with the
electrocardiogram;

wherein a position of the sensor is registered with respect to the synchronized moving
image by touching the sensor to landmarks within the heart and indicating a position of the
landmarks on the synchronized moving image;

15 and wherein the control unit tracks the position of the sensor and indicates the position of
the sensor on the synchronized moving image.

2. The apparatus according to claim 1, wherein the landmarks comprise electrical
landmarks corresponding to known anatomic positions.

20 3. The apparatus according to claim 1, wherein the landmarks comprise positions at
which pressure changes and which correspond to known anatomic positions.

4. The apparatus according to claim 1, wherein the acquired images comprise three dimensional images and the moving image comprises a three dimensional moving image.

5 5. The apparatus according to claim 1, wherein the acquired images comprise two dimensional images and the moving image comprises a two dimensional moving image.

6. A method for registering a position of a sensor inserted in a beating heart with respect to a moving image of the beating heart, comprising:

10 touching the sensor to a wall of the beating heart so as to cause the sensor to move with the wall of the beating heart throughout a beating cycle of the beating heart;

collecting positional coordinates of the sensor with each beat to define a beating structure; and

matching the defined beating structure with the moving image of the beating heart;

15 wherein the moving image of the beating heart is produced based on previously acquired images,

wherein the sensor is touched to the wall of the beating heart at points at electrical landmarks within the heart which correspond to known anatomic positions and the beating cycle is defined by indicating the anatomic positions on the three dimensional moving image of the beating heart.

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7. The method according to claim 6, wherein the moving image comprises a three dimensional moving image.

8. The method according to claim 6, wherein the moving image comprises a two dimensional moving image.

9. A method for registering a position of a sensor inserted in a beating heart with respect to a moving image of the beating heart, comprising:

touching the sensor to a wall of the beating heart so as to cause the sensor to move with the wall of the beating heart throughout a beating cycle of the beating heart;

collecting positional coordinates of the sensor with each beat to define a beating structure; and

matching the defined beating structure with the moving image of the beating heart;

wherein the moving image of the beating heart is produced based on previously acquired images,

wherein the sensor is touched to the wall of the beating heart at points at which pressure changes and which correspond to known anatomic positions and the beating cycle is defined by

indicating the anatomic positions on the three dimensional moving image of the beating heart..

10. The method according to claim 6, wherein the moving image comprises a three dimensional moving image.

11. The method according to claim 6, wherein the moving image comprises a two dimensional moving image.